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ABSTRACT

Lesson plans, developed by teachers in an environmental education workshop, are compiled in this booklet. Curriculum areas covered by the plans include map skills, art, language arts, science, social studies, mathematics, and physical education and recreation. In general they specify: subject category, contributor's name, title of activity, grade level, major concept, purpose and objectives, materials required, procedures to follow, vocabulary words, related activities, resources, and evaluation. Lists of resource personnel and participants, the workshop schedule, and a reference list of books, pamphlets, and films supplement the lesson plans. (BL)

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MURRAY STATE UNIVERSITY - TEACHERS' WORKSHOP

IN

ENVIRONMENTAL EDUCATION

Youth Station, LBL
August 7-12, 1972

SE 016 143

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ENVIRONMENTAL EDUCATION WORKSHOP

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8:30-11:30 Registration & Orientation	8:00 a.m. Breakfast 8:30-11:00 a.m. (A) Science Contri (B) Math Gonnsen & Stefan (C) Art Winstead & Jones (D) Earth Science Veazey	8:00 a.m. Breakfast 8:30-11:00 a.m. (A) Art Winstead & Jones (B) Social Studies Paulk (C) Planning (D) Language Arts Hodges	8:00 a.m. Breakfast 8:30-11:00 a.m. (A) Planning (B) Language Arts Hodges (C) Social Studies Paulk (D) Math Gonnsen & Stefan	8:00 a.m. Breakfast 8:30-11:00 a.m. Teaching in the Field by Individual Class Members	8:00 a.m. Breakfast 8:30-11:00 a.m. Windup and Evaluation
12:00 Lunch	12:00 Lunch	12:00 Lunch	12:00 Lunch	12:00 Lunch	12:00 Lunch
1:00-2:30 p.m. Introduction to Program and Materials 3:00-5:30 p.m. (A) Math Gonnsen & Stefan (B) Earth Science Veazey (C) Science Contri (D) Social Studies Paulk 6:00 Dinner 7:30 Evening Session	1:00-2:30 p.m. Introduction to Program and Materials 3:00-5:30 p.m. (A) Social Studies Paulk (B) Science Contri (C) Math Gonnsen & Stefan (D) Art Winstead & Jones 6:00 Dinner 7:30 Evening Session	1:00-2:30 p.m. Introduction to Program and Materials 3:00-5:30 p.m. (A) Language Arts Hodges (B) Planning (C) Earth Science (D) Science Contri 6:00 Dinner 7:30 Evening Session	1:00-2:30 p.m. Introduction to Program and 3:00-5:30 p.m. (A) Earth Science Veazey (B) Art Winstead & Jones (C) Language Arts (D) Planning 6:00 Dinner 7:30 Evening Session	1:30-5:30 Teaching in the Field by Individual Class Members 5:30-7:00 p.m. Cookout	Adjourn

Basic Lesson Plan Form (Not all parts will be used in every lesson plan.)

Category: (example - Language Arts)

Contributor:

Title of Project

Grade Level:

Concept:

Purpose:

Behavioral Objectives - 1.
2.
3.

Materials:

Procedure:

Introducing the concept -

Developing the concept -

Ending the concept -

Related Activities:

Resources:

Evaluation:

Category: Map Skills

Contributor: Penny Oakley

Treasure Hunt

Grade Level: Grade 3

Aims:
1. The child will be able to locate north by using a compass.
2. The child will be able to measure distance by use of scale.
3. The child will be able to recognize and express relative locations.
4. The child will be able to recognize, interpret, and translate map symbols into reality.

Vocabulary:
Scale - Divided line on a map or chart indicating the length used to represent a larger unit of measure.
Symbol - Something that stands for or suggests something else.
Compass - An instrument for determining directions.

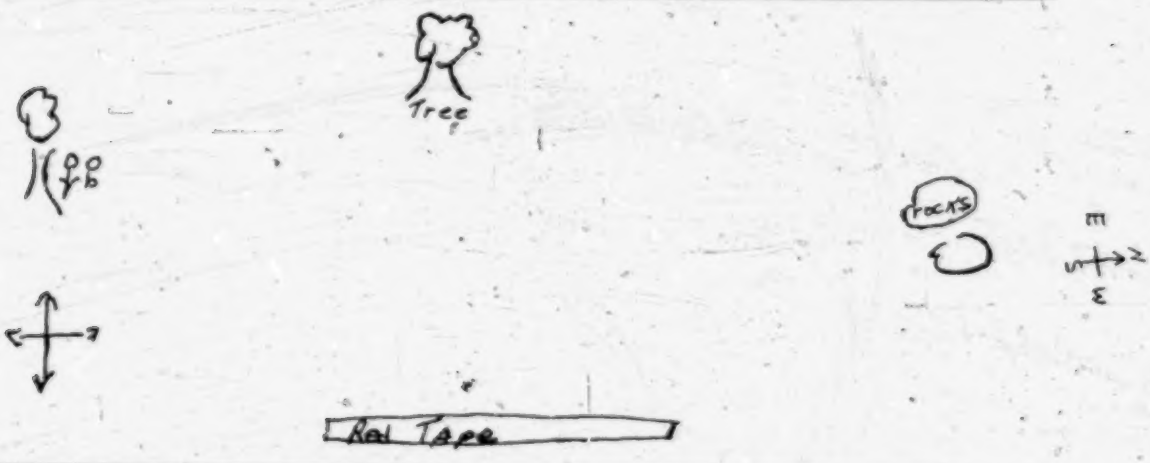
Materials: Compass, map ditto, direction ditto, treasure

Concepts:
1. The compass can be used to determine directions. (Arrow and needle should face same direction to locate north)
2. A map represents a real area of land.
3. The map can be used to help one locate certain things in an area.

Procedure:
1. The teacher should make a map of a certain area.
2. She should have a scale for the map.
3. She should hide treasures (such as fruit, nuts) in various parts of the area.
4. She should have a dittoed map for each child.
5. Each child should use his compass to determine locations of treasures.
6. The child should be given a set of directions.
   Example:
   1. Stand on the red tape
   2. Face north
   3. Go north 10 normal steps
   4. Face south
   5. Go south 5 normal steps
   6. Face west
   7. Go 10 normal steps

Category: Map Skills

Contributor: Penny Oakley (continued)



Use compass to determine which direction faces north.
Each child have a ditto of the map and directions.

Category: Art

Contributor: Attie L. Draffen

Crayon Resist

Grade Level: Grade 3

Concept: Crayons resist water-base paints

Objectives:
1. Appreciate art
2. Think creatively
3. To be more conscious of their environment
4. Have fun while working to learn new techniques

Materials: Construction paper, brushes, white tempra paint, water, crayons, containers, and newspapers

Method:
A. Motivation:
1. Talking
2. Pictures
3. What children like to do
4. Take the children for a hike

B. Procedure:
After motivation, have children to draw a picture on their paper. Use colors appropriate for the scene they draw. Encourage the children to apply crayon heavily and to leave some areas not colored. After the pictures have been colored, apply the thinned tempra paint by brushing it on. The tempra paint soon dries and the pictures are ready for display.

Crayon-Resist (Dry Method)

A successful crayon-resist composition depends upon certain technical procedures that the children must understand clearly. The crayoning must be done on white drawing or colored construction paper with a heavy pressure so that the rich quality of the wax medium is evident. A good way to insure this proper application is to use several layers of newspapers as padding under the crayoning. In order to capitalize on the full effect of this process the student must plan to leave certain background areas uncrayoned. When all objects are crayoned, to use the dry method, the student merely paints with watercolors, water-diluted tempra, or colored inks lightly over his crayon drawing. Let the drawing dry and display.

Category: Art

Contributor: Penny Oakley

Art Activity

Grade Level: Grade 3

Aim: The purpose of this activity is to show a visual relationship between art and nature.

Introduction: This related activity is to be done as a part of a unit on the magic of autumn. We begin by talking about the changes that occur in fall.

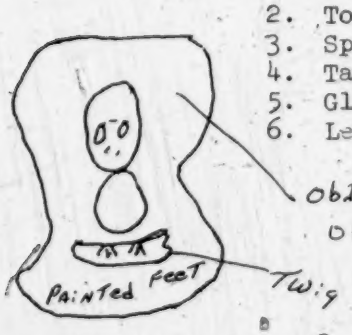
Questions:
1. What changes do you notice in the fall?
2. What happens to the trees?
3. What happens to the nuts?
4. What are the nuts used for?

Concepts:
1. Fall is a beautiful time of the year.
2. Nature provides many materials in the fall that we can use in art.
3. Nuts can be used to make various birds.
4. An owl can be made out of black walnut shells.

Vocabulary: Autumn - fall - the season between summer and winter.
Nature - outside world in its entirety.

Materials: Nuts (walnuts), paint, paint brushes, rubber cement, something to glue the owl to, twigs.

Procedure:
1. The children will go to the woods to gather their nuts and seeds such as acorns and hickory nuts.
2. To make the owl, one should have black walnuts.
3. Split the black walnut in half.
4. Take the meat out of the shell.
5. Glue the flat half of the walnut facing up.(This is the head)
6. Let the child paint the owl's face.



Category: Art

Contributor: Penny Oakley (continued)

7. Glue the bottom half to the plaque facing down (this is the body.)
8. Glue an object for the owl to sit on.
9. Let the child put on the finishing touches.
10. Now let the child gather other nuts and fall objects to create animals of his own.

Category: Art

Contributor: Shirley Mitchell

Plaster Tracks

Grade Level: Grade 1

Purpose: There are many clues to animal habitats.

Objectives: To identify two animal tracks
To learn more about characteristics of animals
To observe shapes of foot prints

Materials: Plaster of paris
Cup to mix plaster of paris
Water

Procedure: Locate tracks of animals to be cast.
Clean the track of debris (pebbles, sticks, leaves, etc.)
Mix a cup of plaster just enough to be poured.
Fill the track.
Leave 15-30 minutes until hard, then remove and brush remaining dirt from the track.
This plaster track may be taken back to the classroom for discussion and display. Future classes can use the track as a stimulator for outdoor animal units.

Category: Art

Contributor: Kathleen Eagleson

Spatter Print

Objective: An activity which children can express themselves.

Grade Level: Grade 1

Materials: Newspaper
Objects found in nature
Screen wire
Old toothbrush
Paint

Procedure: Cover the area with newspaper.
Lay paper to be spattered on top of newspaper.
Put object on paper. Leaves work well.
Hold screen wire over object.
Dip old toothbrush over the screen wire.
Paint will spatter around object.
Remove object and let dry.

These can be displayed in the classroom. Colors of different seasons may be introduced by using different colors and objects having to do with that season.

Category: Language Arts

Contributor: Mary Glenda Fuqua

Library Program

Concept: Library appreciation and library work can be correlated with environmental education.

Objectives:
A. To provide excellent opportunities to teach the use of reference material on field trips.
B. To correlate the appreciation and use of books with environmental education.
C. To learn how to appreciate and care for library books and materials.

Background: The students have been given library instruction and they have been introduced to the books they will be using for reference work on field trips.

Materials:
A. Library books
B. Film: "Books Talk Back," Library Filmstrip, Inc.
C. Laminating machine and film
D. Pencil
E. Paper

Activities:
A. Students can use books for making identifications on field trips.
B. Students can view the film "Books Talk Back" which shows all the stages of a book from a tree to the finished product. This could be used in correlation with a unit on trees and their value.
C. Students can collect small flowers or leaves of plants, press them, dry them and then laminate them in attractive book markers.
D. Students can write a "Do You Know?" challenge for the school bulletin board. Information can be obtained from observation or found in reference material.
E. Have an exhibit in the library of natural materials that students have found on field trips.
F. Have students write letters to resource agencies requesting materials to be filed and used in the school library.
G. Have students to do a poem collection on nature. Compare works of different authors.

Category: Language Art

Contributor: Sonja E. Thiel

Haiku Verse

Major Understandings:
1. Haiku verse comes from the Japanese. It contains a total of 17 syllables written in three lines. The first line has five syllables, the second line has seven syllables, and the third line has five syllables. Haiku verse always has this form.
2. Haiku verse is written about nature.

Objectives: To help pupils -
1. Learn the form of Haiku verse.
2. Understand that Haiku verse is written about nature.
3. Appreciate nature and record their feelings and observations in Haiku verse.
4. Increase their observational and awareness skills.

Procedure: (The following is a suggested discussion and by no means needs to be strictly adhered to.)

Today we are going to learn a new form of poetry. It comes from the Japanese, who are very fond of nature. The name of this poetry is Haiku. It has a definite form of its own. Haiku verse always has 17 syllables, no more and no less. The 17 syllables are spread out in only three lines, each line having a set number of syllables. The first line has 5 syllables, the second line has 7 syllables, and the third line has 5 syllables. This form never changes. Haiku verse is always written about something in nature. It says what someone feels or observes in nature. It can be about plants, animals, or the elements.

Let's see if you can recall what's been said about Haiku verse. What is Haiku about? How many syllables does Haiku have? How many lines? Can you remember how many syllables are in each line? Does Haiku verse always have the same form? Who did we get Haiku from?

Today we are going out by the lake. When we get there, find a spot to sit where you can observe and think about nature. As you are observing nature, jot down words which come to mind. After you have been observing for a period of time say:

Category: Language Art

Contributor: Sonja E. Thiel (continued)

Now that you've had time to observe and think about nature, Let's see if we can record some of these thoughts on paper using Haiku verse. Remember the form: 3 lines (5-7-5) a total of 17 syllables. Haiku verse seldom, if ever, rhymes. After the class has written several verses, let them share their compositions orally.
We'll collect your verses, have them typed out and run off, so each of you will have a Haiku booklet.

Category: Language Arts

Contributor: Mary Glenda Fuqua

Grade Level: Grade 5

Concept: Outdoor activities can help one learn to express himself in writing.

Objectives:
A. To express oneself in the written word.
B. To record what is seen, heard, and how one feels.
C. To use a descriptive vocabulary to express oneself.

Background: Early in the fifth grade school year the class was introduced to descriptive writings, poems, and books about our natural environment.

Materials:
A. Pencil
B. Paper
C. Filmstrip: "Observing by Eye Gate

Activities:
A. Have the children view the filmstrip "Observing."
B. Take your students on a nature walk. Let the children close their eyes and listen to the sounds of nature. Each time they hear a different sound have them raise a finger.
C. Stop at an interesting place and have them write a descriptive paragraph or a poem about what they hear, see, or how they feel in this environment.
D. Writings that result from these outdoor education experiences will be collected in a looseleaf book for the library.
E. Creative writing can also occur through the media of writing letters home.

Category: Language Arts

Contributor: Barbara Hale
(Teacher of a Learning Disabilities class in Paducah - students range from ages 9-11)

Teaching Children to Express Themselves Verbally by Use of Their 5 Senses

Purpose: To help children express themselves verbally by the use of the 5 senses.

Objectives:
A. To help children become observant of things in a given area.
B. To help children learn to listen for different sounds in their surroundings.
C. To help children learn to identify objects through touch.
D. To help children learn to identify objects through smelling.
E. To help children learn to identify objects through tasting.

Materials Needed:
A. Some objects to smell and taste
B. Films and filmstrips
C. Paper and crayons

Introducing Lesson:
A. Name some ways we can identify things around us.
B. Can we identify all objects by just seeing them? What else do we have to do sometime?(At this point use an apple to illustrate) Feel the apple. Smell the apple. Taste the apple.

Activities:
A. Have students spread out. Look around for a few minutes. See how many things each one can find just in the area where each one is standing. Have each student name things. Ask which one of the senses was involved in finding the objects.
B. See how many objects that can be found starting with certain letters of the alphabet. (Ex. A-acorn B-bug, etc.) Make a list of these and display in classroom.
C. Listen for a few minutes to the out of door sounds. Have students describe them. Were any of the sounds loud? Were any of them soft, shrill, low?
D. Have each student go to a tree, close their eyes, and rub hand over bark. Describe how it felt. Could students tell if it was a big tree or little tree? How?
E. Pick up an object from the ground and smell. Describe. Detect different smells in the area. Describe.

Category: Language Arts

Contributor: Barbara Hale (continued)

F. Talk about how different things taste. (Salty, sweet, sour, spicy)
G. Have students name 3 things they saw during this lesson. Name 3 things they heard, felt.

Follow-Up Activities:
A. Have a tasting party. Let students describe the tastes.
B. Show films and filmstrips that would help students become aware of their surroundings.
C. Field trips in the community.

Category: Language Arts

Contributor: Josephine Malone

Grade Level: Grade 1-8

Lesson Plan I

Objective: To express oneself by using the five senses to describe impressions of nature.

Concept: By using the out-of-doors, sensitivity to sounds, sights, smells, tastes, and feelings can be heightened.

Introduction to Class: When we are inside the classroom, we are often not as observant as we should be; we tend to shut out sights and sounds. Let's use the out-of-doors as our classroom to see how much we can observe and learn by using objects of nature. When we re-assemble, we can share some of our experiences.

Activities:

1. Walk out on the grounds. Isolate yourself. Sit or stand quietly for a short time. List all the sounds you hear. Use words to describe these sounds. Tell to what object each sould would apply. Example: buzz - insistent - bees
2. Take a walk. Observe 10 objects of nature. Use an appropriate adjective to describe these objects.
3. Take a walk. Collect an interesting object to use in a guessing game. When the class reassembles, the pupils are blindfolded. Then, let each child present his object to the others for them to guess the name of the object by feeling and smelling.
4. Give each pupil a leaf to taste and smell. Ask him to write a description of the leaf, telling what he learned by using these two senses.

Category: Language Arts

Contributor: Josephine Malone

Grade Level: Grade 1-8

Objective: 1. To learn to use two figures of speech, the simile and metaphor.
2. To express your feelings about a given site by using comparison.

Concept: We can influence our world by being able to communicate mental pictures accurately.

Introduction: All of us like to be able to influence people for various reasons. Perhaps you would like to influence your mother to serve fried chicken for dinner tonight, or you would like to influence teacher to give you an A in history. When you become an adult, you may want to influence people to vote for you for some public office. To enable ourselves to realize such desires, we need to express ourselves accurately and well. One easy way to help people form an accurate mental picture of a situation is to use comparison. You often say, "I feel like --------," "You look like--------," or "He acts like --------."

Activity: Give the class a good example of the simile, such as, "He crept across the floor like a thief in the dark." Note the use of the word like. We might use as the same way. Now, ask the pupils to compare by using the simile. You must use like or as in the sentence. Sometimes when comparing, instead of saying something is like something else, we say that it is or was something else because it reminds us of another object. (Hold up a mushroom.) I can say, "My plant is an umbrella." Notice that I didn't say it looks like an umbrella. This kind of comparison is called a metaphor. Now, ask the pupils to use a metaphor in a sentence.

Follow-Up Activity: Ask the pupils to go to some particular site alone this evening at 7:00 o'clock and to quietly sit and observe. Then at 7:00 o'clock tomorrow morning, return to that same site; sit quietly and observe. Write a paragraph comparing the situation at those different hours. Check to see that you use similes and metaphors as you write.

Category: Language Arts

Contributor: Anna Guess

Grade Level: Grade 1

Objective:
1. To help develop an awareness of surroundings.
2. To help develop muscle co-ordination.
3. To help children hear and reproduce letter sounds.
4. To help them correctly-form the letter itself.
5. To find other things with that beginning sound.

Procedure: Choose a shady, fairly flat, barren spot out of doors. Children and teacher setting informally. (Have available some dead branches for pencils)
All eyes closed, lips tight, listen for things around you. (Teacher can break dead branches into appropriate lengths) Discuss sounds they heard other than sticks breaking. If none were heard - try again, but do not break sticks. Sounds do speak to us.
These cards have a way of speaking to us too. You know how? Yes, sounds. Our names begin with these letters. Softly say your name - again. Did you hear? Did the sound talk to you? Let me try (softly say each child's name) Did you hear someone else whose sound talked like yours?
Our ears have helped us, now get your eyes to work! Choose letter having most names and demonstrate how stick starts at top and goes from left to right. Let them scratch in dirt to get the feel. Try for bold letters.
Try to continue until all name's letters have been used. If time and attention span will allow, have children choose a spot and walk around it to find objects beginning with his own sound.

Materials needed: Before class: Alphabet cards (just for letters needed)
In field: Dead branches

Category: Language Arts

Contributor: Linda Teague

Objective: To teach what nouns are.

Concept: Nouns are words which are the names of persons, places, or things.

Vocabulary: Noun

Materials: Pencils, paper, pictures

Procedure:
1. Have children give names of people.
2. Have children give names of places.
3. Have children give names of things they see outdoors.
4. Show pictures of animals and have them tell what they are. Ask if these words are nouns.
5. Show pictures and see how many nouns the children can name that begin with the same letter.
6. Starting with the letter "a" see if they can name a noun for each letter of the alphabet using things found outside. This could be orally around the group or written individually.
7. Call out words and have them tell if that word is a noun.
   hill - y
   ran - n
   hole - y
   what - n
   nice - n
   mouse - y
8. Show picture and see how many nouns they can find.

Category: Language Arts

Contributor: Attie L. Draffen

Grade Level: Grade 3

Concept: Poetry can be a fun thing.

Activity: Teaching the poem, "Boats Sail on the Rivers."

Objectives:
1. To appreciate poetry
2. To increase word knowledge
3. To help the children to better appreciate their environment
4. To find rhyming words

Materials: Record player, record of "Boats Sail on the Rivers," art paper, and crayons

Procedure: Have the children to relax by letting them lay their heads on their desks and close their eyes - just let them imagine they are at the beach. After the playing of the poem let the children use their English book - page 179* Discuss the various ways in which familiar words are used - e.g. - "Clouds sailing across the sky"; "the bow that bridges heaven"; and "building a road from earth to sky." Ask the children if they can find two rhyming words in the first stanza. Be sure they know what a stanza means. In stanza two there are three words that rhyme with one another, have the children find these words. Let the children tell of their experiences during the summer of boat trips, finding rainbows, picnics, etc. After discussion of the poem, pass out art paper and crayons, and let the children illustrate the poem. These illustrations would be very decorative on the hall bulletin boards.

*Lesson found on page 178-179 in The Roberts English Series.

Category: Language Arts

Contributor: Becky Kanipe

Grade Level: Grade 3

Objective:
A. To create a greater awareness of the things around the student.
B. To help develop a better vocabulary.
C. To further develop the child's imagination.
D. To help the child develop a better understanding of poetry and creative writing.

Procedure:
A. Introduction
1. Send students out of doors for a specified time.
2. Find an area of interest to them and have students observe the things happening in this area.
3. Have students return to classroom or some other central location.

B. Explanation of what students are to do.
1. Write haiku, cinquain, or make a list about the things that were seen.
a. Each word of the list should begin with the same letter and they should describe the event or object seen.
b. Explain that a haiku is a Japanese poem with the first line containing five syllables, second seven syllables, and the third sentence five syllables. A haiku does not tell what it is written about.
c. Explain that a cinquain is another descriptive poem containing five lines.
2. Read these to the other students and if it is a list or haiku let the other students guess what the poem is about.

C. Activities
1. Have students write about things other than those found only out of doors, like each other.
2. Make a book of the poems written by students to have in the room library.

Category: Science

Contributor: Pat Fox

Concept: All plants and animals depend upon their environment

Objectives:
1. To observe that living things depend upon their environment.
2. To discover that if one plant or animal is affected all are affected.
3. You depend upon the environment.

Background:

Question:
1. What do animals in the forest eat?
2. How do plants grow - what do they need to grow?
3. Why can't a fish live on land - or a rabbit live in water?
4. What would happen if all the grass died and mud replaced it - how would it affect the animals and plants? What would then happen to deer, hawks, and snakes?
5. Why do you live where you do? What would happen to you if all the grass died?

Activities:
1. What plants need to grow - Get 4 plants and place in containers - control the soil, water, and light in each plant. In one container allow the plant proper light, soil, and water. Vary the soil on one, wrong composition for the plant, the water on another, too little, and the sunlight on another, too little. Let the two other elements stay the same as those in the control plant. Note the results in a two-week period.
2. Why do animals live where they do? Look at and discuss body parts of these animals - observing and discussing what each part of the body is used for.
3. What happens to an area when its environment disappears? Use a mouse in a bell jar, feed and water it but keep it constantly in the open. Observe what happens - how and when it dies.
4. How do plants affect an area. Take two plots of ground - 2'-2'-2" - and set them on a screen over a bucket. Have one plot with grass and small plants - the other bare of vegetation. Pour 1 gallon of water on each. Observe what happens.
5. Take a field trip to a washed out gulley near your school. Count the plants and animals you see growing. Discuss this.

Category: Science

Contributor: Pat Fox (continued)

Materials: Question 1. Book about the eating and [illegible] habits of animals. Discuss, read, and report on these in the classroom.

2. Four small plant seedlings, four containers, an object to obstruct sunlight.
3. A live fish in a see-through tank and a live rabbit in a pen suitable for observation.
4. (a) Gallon jar, live mouse, food and water for the mouse.
   (b) Two plots of ground dug from the school ground - one bare and another with a good supply of plants. Two wire screens to set the sod into, bucket.

Grade Level: Grade 2

Category: Science

Contributor: Pat Fox

Concept: By observing nature, we become aware of the differences in nature and their purposes.

Grade Level: Grade 2

Objectives:
1. To make children aware of the differences in nature.
2. To make them aware that different shapes and appendages serve different purposes.
3. To give them a general knowledge of classes of plants and why they are placed in those classes.

Background: Have the children gather 7 different articles each that are of interest to them - from the woods and meadows. Discuss how they are different and alike.

Procedure: Questions -
1. What coverings do all these things have?
2. What does or did support them?
3. What did they come from?
4. What purpose did they serve?
   Lay the collection in a pile and ask the children to place them in "like" groups. Example: Leaves with leaves, bark with limbs, etc.
5. How are all these thing alike - do they serve similar purposes - do they have the same shape?
   Now that the groups of leaves, mushroom, etc., are together, start to show the children the difference within the groups. To get them to notice the difference, divide them up into groups of - boy and girl, color of clothing, etc., and discuss the different features they have themselves.

   Now begin to talk about the collection:
   1. How are the leaves different - do you see any around that compare to it on the trees?
   2. What differences do you notice in the other group of articles?

   By doing this bring them to realize the objectives.

Category: Science

Contributor: Shirley Mitchell

Where Animals Live

Grade Level: Grade 1

Purpose: This is a project which can be used to enrich a unit on animal homes. A discussion in the classroom of animals should precede this activity.

Objectives: To create an awareness that animals use materials from their environment for their needs.
To create an interest in the study of animal homes.
To develop an appreciation for animal homes.
To recognize animals can be found on the ground, in trees and in the water.

Vocabulary: Environment
Shelter

Materials: Bird nest, crayons, paper, 3 colors flagging tape, bell.

Procedure: The children should stand in a circle around a bird nest which the teacher has placed there. Proceed to ask:

1. What animal made this home?
2. Where would you find it?
3. What materials are used? (Let children take it apart)
4. What other animals do you know build nests?
5. What kinds of homes do beavers build?
6. What kinds of homes does a farmer provide for farm animals?
7. What kinds of homes do people provide for pets?
8. What animals nests in holes and rocks?

After these stimulation questions have been discussed, give each child crayons and paper. Tie either a red, orange or white strip on their arm. The children proceed to the color area corresponding to the color on his arm. The teacher should have already tagged off three different areas before hand. These areas should be close to water, woods and at edge of woods.
Once the child is in his area, he must stay within his boundaries. The children should look around and see how many different animal homes can be found or seen from that particular area. The children should draw with crayons all the homes they find or see.

Category: Science

Contributor: Shirley Mitchell (continued)

The three groups join at the sound of a bell. (About 10 min.) The group will discuss the drawings and homes found.

Note: If a child insists that he cannot draw, ask him to make straight lines for logs and trees, circles for bushes, and squares for stumps, etc.

Category: Science

Contributor: Jane M. Stewart

The Making of a Bat

Grade Level: Grade 2

Objective:
1. To help the child see his relationship to the trees.
2. To help the child gain an age relationship to the development of a tree.

Concept:
1. Man is dependent on the by-products of the forest.
2. The forest enriches our lives by providing tools for leisure
3. A forest has value beyond that of physical consumption.

Materials:
1. Seven year old tree (approx.)
2. Saw
3. Seedlings
4. Baseball Bat
5. Plane
6. One (cooperative) Custodian
7. Knife (adults only)
8. Sandpaper
9. Shellac

Vocabulary:
Growth rings
Seedlings

Procedure:
1. Show the class a baseball bat and discuss its origin.
2. Discuss the process from tree to finished product.
3. Talk about the size tree required for a bat. Help them to realize the length of time the tree has been growing.
4. Look around for a possible tree to use to make a bat. Talk about size, etc.
5. Allow the children to assist in tree cutting, stripping the bark, and shaping the wood. (Hopefully the custodian will do the major part of the shaping.)
6. After discussion related to the student's responsibility to replace the tree used for bat to bring them pleasure, guide the children in planting the young trees. One group can continue to work on the bat while others are planting, rotating groups.

This lesson is designed to be used during World Series, which coincides with "tree planting" time.

Category: Science

Contributor: Becky Kanipe

Field Trip to a Stream

Objective: A. To create a greater awareness of a stream.
B. To help children better understand the movement of the stream.

Grade Level: Grade 3

Procedure:
A. Introduction
1. Listen to noise
a. Why it makes noise
b. How it makes noise
c. Describe the noise
d. Compare the noise
2. Words thought of when word stream is mentioned.
B. Movement of stream
1. Cause of movement
2. Speed
3. Effect of depth and width of stream
4. Direction of movement
5. Effects of movement of land around stream.
C. Activities
1. Float various objects at same time to see which will float. Find out why somethings float while others do not.
2. Time how long it takes for an object to float from one spot to another - at least 20 feet apart. Try this at different spots on the stream where current is different.
3. Find causes of stream moving faster in one area than another.
4. Draw a sketch of the stream.

Category: Science

Contributor: Don Burchfield

The Skeletons in Nature's Closet

Objective: To introduce the ecological niche of certain animals and plants of the environmental scheme.

Concepts: To show the student that man reacts to his environment by emotions rather than objective evidence.
To think of the positive and negative elements of an organism.
To change the attitude of the student to the neutral position before final judgment.
To relate the category of the organism as a producer, consumer or decomposer.
To have the student develop an empathy for an organism with a bad reputation.
To increase the sensory development of the student.

Method: Nature hike. Prepare list for rank orders, role play.

Vocabulary:

Producer	Decomposer	Niche
Scavenger	Transformer	
Consumer	Ecosystem	

Grade Level: Middle School and Secondary

Desirable number of students: 12

Activities: Demonstrate the method of presentation you expect from the student by using plants.
Play act the following:
- Poison Ivy
- Johnson Grass
- Fescue
- Bermuda Grass
- Honey Locust
- Blackberry
- Venus Fly Trap
- Black Jack Oak
- Beach Tree
- White Oak

Category: Science

Contributor: Don Burchfield (continued)

Have student designate first a reaction to each word. (Good thought or bad thought) Rate them from 1 to 10 on the list to preserve from extinction. Pick their two most desirable. What legal charge would you place against each plant. Review the natural history of identified plants.

Each student selects a name by draw. Locate each student in a designated territory.

Have each student show an emotion that might be displayed by an animal. Act out the dominant characteristic of the animal.

Animals:
- Rattlesnake
- Skunk
- Eagle
- Carp
- Beaver
- Snapping Turtle
- Deer
- Rabbit
- Mouse
- Termite
- Grasshopper
- Duck

Match three animals into a ecosystem.

Select the three animals most beneficial to man.

Which animal would you allow to become extinct first?

Student acting as the animal will identify or state his:
- Home
- Favorite temperature
- Family
- Choice food
- Required space for living
- Most desirable characteristic he has
- Water requirement
- Worst enemy
- Life span
- What factor prevents him from ruling the world
- What useful reason would he sacrifice his life

Instructor's Hints: Leader must take the position of the "Devil's Advocate." This must be a fun lesson and approach seriousness at regular intervals. This lesson would need a strong leader with a good natural history background.

Category: Science

Contributor: Don Burchfield (continued)

Evaluation: The group will try to arrive at three conclusions that can direct the manipulation of our environment.

1. All organisms react in a dynamic process
2. Nature cannot be in balance
3. Man's attitudes about the components of his environment actually direct his environment

Materials: Field Book of Natural History - Palner
Modern Biology - BSCS - Green Version
Ecology - Odom
Acclimizatron - Steve Van Matre

Category: Science

Contributor: James Striler

The Relationship of Light to Tree Growth

Objective: To show field observation of the effect light has on trees.

Concepts:
1. Each tree develops in proportion to the light.
2. Different kinds of trees live in different amounts of light.
3. The lateral foliage develops according to the amount of light.
4. Trees will have a different structure according to the amount of light.

Vocabulary:
- Competition
- Environment
- Photosynthesis
- Crown
- Lateral limbs
- Pruning

Instructional Procedure:
1. Pick out two trees of the same species in different environments.
2. Discuss:
   a. Describe the trees around it.
   b. How much light does the tree get from the crown and lateral sides?
   c. What herbs grow around the tree?
3. Discuss the effect of light on the trees.
   a. Briefly go into photosynthesis and relationship of light.

Evaluation: Why does the open-crown tree have more limbs and a greater crown than the one in the woods?

Category: Science

Contributor: James Striler

Pond Community

Objective: To observe the organisms and the habitat they occupy in the different environments of the pond.

Concepts:
1. The productivity of organisms depends upon environmental factors.
2. Kinds and number of organisms will be affected by environmental factors.
3. The shore of the pond will reveal the future development of the pond.

Vocabulary:

Plankton	Succession
Climax	Community
Aquatic	Environment

Instructional Procedure:
1. Obtain water samples in different depths of the pond.
2. Obtain plankton from different areas of the pond.
3. Collect the samples of plant life in different areas of the pond.
4. Observe zones of the community on the shore. What are the dominant plants of each zone?

Evaluation: Is there a pattern of organisms in different zones of the pond and shore line?

Category: Science

Contributor: Ann McCroskey

Aquatic Botany - A Taxonomic Approach

Recommended Grade Level: This activity is designed to be a part of a series centering around structural variations found in plants. It is recommended for inclusion in a high school biology curriculum.

Concept: Taxonomist classify plants partially upon morphological structure.

Objective: Following this activity the student will be able to identify at least 3 morphological differences between plants. Also the student will develop a working knowledge of the means by which a taxonomist reaches a decision.

Materials: A pond containing any two of the following genera:
a. Lemna
b. Spirodela
c. Wolffia
A hand lens would be of help but is not mandatory.

Field Study:
1. Move the group to the edge of the water. Ask the students to observe the entire pond for a few seconds.
   Questions to explore:
   a. What first attracts your attention about this pond? Allow students to explore many possibilities until a student mentions the green surface cover.
   b. What type of organism makes up this cover and what is its origin?
      The students should readily say plant material; however, many will feel this material came from the canopy above.
2. Have students dip out some of the plant material with their hands. The material may be placed on white sheets of paper for examination.
   a. How would you describe the organism before you?
   b. Do you have more than one type of organism?
   c. What are some of the differences you observe with the unaided eye?
3. Using a hand lens have student reexamine the plant material.

Category: Science

Contributor: Ann McCroskey

a. Name the plant structures you observe.
b. Are there any color variations that you observe?
c. Do all the plants have roots?
d. Do you notice any size variation?
e. How many nerves can you count?

4. Have the students separate the plants into as many groups as they think they have according to the morphological characteristics discussed.
5. Discuss the number of groups they decided upon.
6. Introduce the prospect of devising their own key for these organisms.
7. Allow students to give their own names to the types they discovered.
8. Have students make a drawing of each type of plant they named to be taken back to lab. Also a small jar of plant material for future study.

Activity Rationale: Plant life is less understood by most secondary biology teachers and for this reason zoology consumes most of the curriculum in the average classroom. Variation in animal structure is more readily recognized by students than that of plants.
This pond activity is designed as an introduction to the variations in structure of plants. Simple morphological differences will be recognized and their uses discussed.

Background Information for Teacher: The pond to be used is a quiet body of water not shallow enough for rooted plants to grow entirely across. There is little wave action, and the bottom is covered with a muck-silt mixture.
As the pond weeds become increasingly abundant, they contributed enough decaying matter on the pond bottom each year to begin building up the bottom. In addition many emergent plants began to grow outward from the shore contributing to the build-up of bottom debris.

Seasonal Implications for this Activity: Late spring through fall is the ideal time for exploration around the pond. The organism used in this activity will not be abundant until this time.

Category: Science

Contributor: Ann McCroskey (Activity 2)

Aquatic Botany - A Taxonomic Approach

Recommended Grade Level: This activity is designed to be a part of a series centering around structural variations found in plants. It is recommended for inclusion in a high school biology curriculum.

Concept: Plants requiring the same conditions will adapt contrasting and complimenting morphological appearances.

Objective: Following this exercise the student will be aware that aquatic plants have certain similar structures by identifying these structures and comparing them to the plants studied in the previous activity. The students shall also become aware of certain flower structures by dissecting and examining the various aquatic blooms.

Materials: A body of water containing at least two of the following genera:
a. Nymphaea
b. Nuphar
c. Nelumbo
d. Brasenia
Sheets of white paper

Field Study:
1. Move the group to the waters edge between the dam and the stepping stones at Hematite. Have them observe the entire lake and then the portion closest to them.
   Questions to Explore
   a. Does the surface cover resemble that of the pond studied previously? If so how? If not what are some of the differences?
2. Move students into the water in order to collect at least two different types of water lilies which they will remove to the bank.
3. Place two of the different lilies side by side on the bank and cover each with a sheet of paper.
4. Begin by instructing the students to slowly move the paper to expose only the underground stem (rootstock).
   Questions to Explore
   a. Ask students if this portion of the plant shows any difference - if not proceed.

Category: Science

Contributor: Ann McCroskey

(Activity 2 continued)

5. Have students continue to expose individual plant parts until they find a structure that differs. Many times only the flower will show any difference and that difference may be found only in one of the reproductive structures.
6. Each time students find differing parts during the comparison, have them record these in a notebook and describe the differences observed.

   Questions to explore

   a. Where is the petiole attached to the leaf?
   b. What is the color of the flower?
   c. Describe the venation?
   d. What structures do you find that resemble those seen in the pond exercise?
7. The comparison between plants is to be continued until all different types of lilies collected have been compared.
8. Have the students give their own names to the plants examined and ask them to construct a key.
9. The students should then be allowed to examine a botanical key for that family and compare it to their key and try to fit the names they created with the correct generic term. When completed this will be used as an evaluation.

Activity Rationale: Since forests are more dominant in most areas, the smaller plants and aquatic plants are some times forgotten. It is the purpose of this activity to introduce students to a second family of aquatic plants again from a taxonomic view. Because of the ready availability of water in the area, a study of aquatic plants affords the instructor the opportunity to introduce botany in other ways than may have been approached. Most children study trees and flowering plants from elementary through 8th grade, and this new approach can be refreshing. Hematite Lake affords excellent conditions for this activity designed as a continuation of the taxonomists work in plant classification.

Category: Science

Contributor: Ann McCroskey

(Activity 2 continued)

Background Information for Teachers: The body of water used for this activity could range from one the size of Hematite to small roadside ditches. However, because of easy accessibility to Hematite and previous knowledge of plant material present this lake was chosen.

Hematite has been drained in an effort to eliminate much of the vegetation that will be studied in this activity because of its effect on the fish population. At this time material is still available.

Category: Science

Contributor: Zona L. Henderson

Leaves

Concept: Trees are some of our best nature studies and they give stability to the environment.

Objective:
1. To observe natural phenomena of trees.
2. To learn the major parts of a leaf.
3. To learn the venation of a leaf.
4. To learn the form of a leaf.
5. To learn how to key trees.

Background: Students are asked stimulating questions while observing trees. These will be found in the procedure.

Materials: Hand lens, keys and mimeograph sheets.

Discussion: Terms to discuss
Form - shape
Venation - arrangement of veins
Petiole - stem

Procedure: Take the students to look at the beautiful trees. Ask them to stand and look at a tree two or three minutes and then ask them what they see. Give the students time to answer. Following this discussion, ask them to notice the leaves on a particular branch. Do most of the leaves receive sunlight? List the uses of a tree. Students in teams of two are placed under different kinds of trees. At this point, the parts of the leaf must be found. The next step is to look at the mimeographed sheets and pick out the form and arrangement of leaves on the stem. Some students will ask the kind of tree so allow them to classify the leaves but stress the fact we no longer memorize scientific names.

References: Summer Key to Tennessee Trees How to Know the Trees.

Category: Science

Contributor: Zona L. Henderson

Edible Wild Plants

Concepts: Some of our finest horticultural varieties have been developed from native plants and there are many edible wild plants in our country.

Objective:
1. To discover that there are many edible wild plants.
2. To learn that some are good to eat.
3. To learn that some are good for beverage.
4. To learn to appreciate plants more.
5. To learn more plants in general.

Background: A display of corn cob jelly or maple syrup should be shown to the students.

Procedure: Allow the students to plan what they will do with the wild plants. Some suggestions are a complete meal cooked from wild life or samples of food and beverages displayed for other departments in the school. Take a field trip and gather as many specimen as possible. Try to find out what each can be used for.

Following are some examples:

mayapple - eat the fruit
papaw - eat the fruit
wild strawberry - jelly
fox grape - eat raw or jelly
passion vine - eat fruit or jelly
persimmon - fruit
white oak acorn - coarse meal
ginkgo seeds - toasted
maple - syrup or candy
sassafras - tea
sweet gum - resinous - chewing gum

There are hundreds of others listed in the following reference.

Edible Wild Plants by Jennie Arnold Medsger.

Category: Science

Contributor: Tom Moore

Unit: Chemical Properties of Soil

Soil Samples

Concept:
1. Soil testing is an important step in soil conservation.
2. All areas, fields, lawns, and gardens do not need the same fertilizer analysis.
3. Soil sampling is not a difficult task.
4. Fertilization and liming practices based on a soil test obtain best results.

Teaching Objectives:
1. To understand that proper fertilization is also an important conservation measure.
2. To cause students to see that soils differ in their requirements.
3. To become proficient at sampling soil.
4. To use soil tests to determine fertilizer needs.

Things to be Considered:
1. Need for sample
2. Method
3. Location
4. Time of year
5. Depth of sample
6. Preparation of sample
7. Number of samples
8. Representativeness of sample

Vocabulary:
Available nutrients
Fertilizer analysis
Ratio of N,P, and K
pH
$CaCO_3$
Acidity and Alkalinity

Materials Needed: Clean bucket, heavy paper bags, and one of the following: Soil auger, soil sampling tube, spade, or iron pipe

Instructional Procedure:
1. Guide and assist the students to bring out the things to be considered.
2. Sample the schoolgrounds
3. Avoid old house sites, small garden plots within the area, etc., to insure the samples to be truly representative.
4. Observe closely the method of sampling and the preparation of sample.
5. Deliver the prepared sample to your ASCS office.

Category: Science

Contributor: Tom Moore (continued)

6. Have students discuss what the probable results are.
7. Discuss the results when they are obtained and make recommendations.

Evaluation: Have those that are interested sample their home lawns or farms for testing.

Category: Science

Contributor: Caroline Summers

A Study in the Effects of Opposite Exposures in the Same Location

Objectives:
1. To develop skills in collecting field data
2. To organize collected data
3. To compare and analyze data
4. To understand how various exposures can affect life in the same location

Materials: Ball of Twine

Procedure: No. 1
1. Divide class into two teams.
2. Measure and mark 25' distance on each side of stream.
3. Each team will observe one side of the stream.
4. Each team member will take data in on section of the 25'
5. Each member will count plants, list number of different kinds of plants, note amount of foliage, plant height.
6. Team members will meet and combine data.
7. Both teams meet and compare data.

Procedure: No. 2
1. Use two teams on opposite land slopes N-S or NE-SW.
2. Run string 25' down one slope and twenty five feet up the opposite slope.
3. Team members will each observe a section 3 feet from string.
4. Each team will organize its data.
5. Both teams will compare data.

Questions to be Considered:
1. What are the major differences between the opposite sides.
2. List some of the reasons that could possibly account for these differences.

Category: Science

Contributor: Caroline Summers

Comparison of Two Communities

Location: Audubon Park

Sites: A. Hilltop area - Wildlife Section, Climax Forest.
B. Area where fire burned over a section in 1940.

Objectives:
1. To help students realize that nature, if left alone, in time, mends its own wounds.
2. That succession proceeds until climax is reached.
3. That the climax area at one time looked like the other section.
4. The earth changes until a balance between the living and non-living is established.
5. Initial changes are rapid. Later changes become slower and less visible.

Procedure:
1. Divide class in pairs.
2. Each pair will mark a quadrat of 6-10' in each location.
3. Each paid will record the number of different plants, size (D.B.H.) of young trees, kind of dominant plants.

	D.B.H.	Tree H.	No. Plants	Dominant Plants
A.				
B.				

Questions:
1. How do you think area (A) looked in 1939? Area (B)?
2. How do you think area (A) looked 5 years ago? Area (B)?
3. How do you predict area (A) will look in 1980? Area (B)?
4. What effect do populations have on their environment? (Based on this experiment)
5. How would you estimate the rate of change?
   (a) 1940 (c) 1960
   (b) 1950 (d) 1980?
6. Would there be any dominant patterns present at any stage?
7. Would any of the plants that appeared soon after the fire be found in 1980?
8. If your answer to Number 7 was "yes", of what possible advantage could this be to the area?

Category: Science

Contributor: Shirley Litty

Locating North by Use of Stars and Constellations

Objectives:
1. To introduce part of our environment usually ignored, and create awareness of the beauty of the night sky.
2. To provide students with a practical way to locate directions by use of constellations and stars.

Concept: Directions can be determined at night without use of instruments.

New Vocabulary:
Constellation
Ursa
Ursula
Polaris
Celestial

Procedure:
1. Students meet out of doors, after dark, on clear night.
2. Direct attention upwards to the heavens. Allow students to just observe the view for a short period of time.
3. Discuss how directions can be located during the day. Progress to determining directions at night. Discuss situations where knowing directions at night would be necessary.
4. Have students try to locate the Big Dipper. Assist those students unable to find the formation.
5. Explain the pointer stars of Big Dipper and how they can be used in locating Polaris, the North Star, by using a pencil.
6. Have students draw a circle, inserting the Big Dipper, the Little Dipper, and the North Star and their spacial relationship to one another.

Materials:
Paper
Pencil
Flashlights or lantern

Evaluation: The student drawings can be evaluated by grading. Required knowledge: Constellations, correct number of stars in each; relative position; direction.

Category: Science

Contributor: Charles Kramer

The Adaptability of Birds

Objective: To better understand how birds have adapted to various environments.

Activities: Two field trips - one to woodlot and one to city zoo.
Some other activities are distributed throughout the lesson.
Make a list of bird foods.
Describe as many kinds of nests as you can. Gather raw materials used in nest building. Describe nest sites.

Lecture: Discuss how birds have adapted to the air, land, water.
Characteristics of birds -

1. Body covering of feathers.
2. Bones light, porous, and in certain cases air-filled.
3. Fore limbs developed as wings and in most birds used for flight.
4. Body supported by two hind limbs.
5. Mouth in the form of a horny, toothless beak.
6. Heart four-chambered.
7. Body temperature constant.
8. Amniote egg enclosed in a lime-containing shell.

Adaptations necessary for flight.

(A) Body streamlining to reduce air resistance.
(B) Fat reduction.
(C) Highly developed digestive system.
(D) Modified reproductive system.
(E) Highly developed optic lobe.

Show a picture of several different types of feet and beaks, and discuss how they are adapted to different environment.

Category: Science

Contributor: Charles Kramer

The Living Condition

Objective: To better understand the differences between living and non-living objects.

What is life? This question should be capable of producing good class discussion.

Have each student make a list of the origin of materials found in the room as to living or non-living.

Emphasize the point that fewer materials today come from living objects.
Discuss early ideas concerning the origin of life.
Have each student explain the phrase "Like Begets Like."
Discuss characteristics of living organisms.

1. Have a constant energy requirement.
2. Have a cellular organization.
3. Are capable of growth.
4. Have a definite form and size range.
5. Have a life span.
6. Have the capacity to reproduce.
7. Are capable of response.
8. Have a critical relationship with the environment.

Category: Science

Contributor: Betty Ormes

Study of Plant Populations

Grade Level: Grade 8

Objective: To compare plant population by identifying and counting kinds of plants found in a quadrat one square foot, marked in an open field, edge of field (edge of woods) and a deeper wooded area.

Concepts:
1. Plants can be divided into "general types" for this study: Trees, shrubs, seedlings, saplings, herbs, grasses and simple plants (mosses, fungi).
2. The amount of moisture and sunlight influence the number and kind of plant that grows in an area.
3. Over a period of time different plants will come into an area.
4. The time since the plants have been able to develop without interference from outside factors such as weather, fire, man, or other animals, helps determine the kind of plants, in an area.
5. More kinds of plants are found near edge of woods.

Vocabulary: Use the following general terms for kinds of plants found:
Trees - tall woody plants from a single trunk (saplings - young tree, seedling - baby tree)
Shrubs - branch out at or near the ground
Herbs - non-woody plants (die back at least ground level in winter)
Grass - small plants with long slender blades
Simple plants - fungi, moss, fern

Procedure:
1. Divide into teams of 2 or 3 people each.
2. Each team mark a quadrat approximately one yard square in each of the following areas: open field, edge of field (edge of woods), deeper wooded area.
3. List the kinds of plants found on exercise sheet.

Category: Science

Contributor: Betty Ormes

A Still Water Community

Grade Level: Grade 8

Objective: To determine some of the competitive and cooperative relationships that exist among the plants and between the plants and other living organisms in a still water community by observing life and environment in a small pond. To examine external forces affecting pond life.

Concepts:
1. The pond is abundant with life.
2. Many types of plants are adapted to the water and to the environment immediately surrounding.
3. Plants use oxygen from the water and give off carbon dioxide to be used by animals.
4. The community provides food and water for animals.
5. External factors such as wind, sunlight, precipitation and run-off affect the life of the community.

Materials: Magnifying glasses, baggies, rubberbands, pencils, exercise sheets, seine.

Procedure:
1. Approach within about 10-15 ft. of small pond and pause for answering and discussing the following questions: Ask students to look around entire pond. What are some of the external factors that influence a still water community? (Supply students with exercise sheets or they may be able to answer onpaper they have) Give time for each student to list individually. Discuss.
2. Ask students to look for and list effects of nearby plants. Discuss. List some benefits the pond may have for its environment. Discuss.
3. Walk down to edge of pond for a closer look. Ask one student to obtain water in a baggie for closer observation of life with a naked eye and then magnifying glass. How many different living organisms can you identify? Ask one (or several) students to use seine to find other possible life. Is there evidence of fish? Why do you think you wouldn't find fish? Ask students to point out some differences in kinds of plants adapted to area in and around water.

Category: Science

Contributor: Betty Ormes (continued)

Evaluation: Review specific ways life in the pond is dependent upon and in competition with plants and organisms in the community.

Category: Science

Contributor: Betty Ormes

EXERCISE SHEET

Open Field		Edge of Field (Woods)		Deep Woods	
Kinds	Number	Kinds	Number	Kinds	Number
Total		Total		Total	

1. Which area has more plants?
2. What kind of plant is more abundant in each area?
   Field?_____ Edge?_____ Deep?_____
3. Is there any plant found in all three?
4. Compare your data with the other teams.
5. Why do you think more kinds of plants are found in one area more than others?
6. What external factors do you think influenced their growth?
7. Estimate how long you think it has been since the areas have been undisturbed? Which one more recently? Why?

Note: This lesson is designed as a "lead-up" into further exercises in plant succession.

Category: Science

Contributor: Kathleen Eagleson

Grade Level: Grade 1

Objective: Learning games can be invented and played with materials found outside.

Materials: Objects which the class has collected.
Cards with letters of the alphabet.

Activity: Place objects on squares found starting with the letters of the alphabet.

A Acorn	M Mushroom	L Leaf
T Twig	B Bug	S Seed
N Nut	R Rock	F Flower

Category: Science

Contributor: Charlene Chism

The Sense of Touch

Grade Level: Grade 1

Objective: 1. To broaden the awareness of the many textures found in the out of doors.

Concept: 1. Through the sense of touch, we may feel hot and cold, hard and soft, rough and smooth, wet and dry, and shapes and sizes.

Procedure:
1. Fill paper bag with objects found around home so that the children will not be aware of what is in the bag.
2. Proceed to outdoor area.

Activities:
1. Have children sit in a circle on the ground.
2. Blindfold each child and allow them to take turns choosing an object from the grab bag. Have him describe how it feels.
3. Take a walk in the woods: feel soil, plants, leaves, burrs, bark, etc.
4. Collect objects for later display.
5. Sit down in group and talk about words that might be used to describe what they felt as they touched different objects.

Equipment:
1. Paper bag filled with objects of different textures.
2. Large handkerchief for blindfold.

Category: Science

Contributor: Karen Baker

Grade Level: Grade 2

Objective: To provide an understanding that living things reproduce themselves which is a means of continuing a species.

Concept: A living thing can only reproduce another living thing that is like itself.

New Vocabulary:

Mother	Baby
Cat	Kitten
Dog	Puppy
Cow	Calf
Sheep	Lamb
Horse	Foal
Turkey	Poult
Goat	Kid
Duck	Duckling
Hog	Pig

Procedure:
1. Ask question: What does your mother, father, brother, sister, uncle, aunt, grandmother, etc., look like? Do you look like them? They all have a body with 2 arms, 2 legs, 10 fingers, 10 toes, 2 eyes, a nose, a mouth, and 2 ears. Do you have these things too?
2. Why do you think that you have all these things on your body like some of your family or friends do?
3. The answer is because living things reproduce only other living things that are like themselves.
4. If our mothers and fathers can have children to look like themselves, then what about animals? If a cow had a baby would it look like its mother? How about a cat and its baby? Or a goat and its baby?
5. Show pictures of baby animals with their baby names being taped to a wall for all children to see. (Take children to visit an animal farm)

Activity I:
1. Let the children mingle with the animals and their babies for a few minutes. Be sure that the children point out the mothers and name their babies.
2. After adequate time has been given for the children to get acquainted with the baby animals, gather the children together to play a game.

Activity II:
1. Explain to the children that they are going to play Animal Scramble (Played the same way as Fruit Basket Turnover)
2. Arrange the children in a circle sitting in chairs. Pass out a tag for each child. Tags are made of construction paper.

Category: Science

Contributor: Karen Baker (continued)

The tags are cut-outs of baby animals with the name of the animal on the tag.

3. Hint: A good way to make sure that the children are understanding, call the mother name of the animal. Throw this in once in a while to test them.

Materials Needed: Pictures of animals and babies
Word cards with animal names
Tags (of animals)
Straight pins
Chairs (enough for game)

Category: Science

Contributor: Jo Ann Sullivan

A Look in the Woods - The Soil

By careful and observant study, many interesting features of the woodlands climate and its effect on plants and animals that live in it can be seen. Most of the woodland plants grow in the ground. The soil is a very important part of the woods. These questions will help us learn about the soil:

1. How deep is the soil? (Measure in several places to get an average)
2. How steep are the hills?
3. Are some of the hills too steep for trees to grow on them?
4. Do some sections of the woods have wetter soil than others? Where? Why?
5. Of what is soil made? (Example)
6. What are some types of soil that you can find in different parts of the woods?
7. What differences are there in the surface soil and deep soil?
8. How does the soil seem to affect the plants?
9. Do some plants seem to prefer wet soil? What kinds grow in dry soil? Do trees need deep soil?
10. Are there places in the woods where there is no soil?

Type:
1. Is the soil sandy, clayey or a mixture?
2. Does it have dead plant material in it?
3. What does the surface soil look like? What does the soil look like one foot down? Observe the color, smell and feel of several samples.

Moisture:
1. Is the soil wet, moist or dry? Is it the same at all depths? Does it look like it would hold moisture well? Why or why not?

Culminating Activities:
1. Study area of soil erosion. Find out why and the probable causes.
2. Visit areas of various types of erosion.
3. Measure water content of soil samples.

Source: Bates, David. Studies for the Woodlands, Ryerson Press, Toronto, Winnipeg, Vancouver, 1970.
MacMillan, Dorothy Lou. School Camping and Outdoor Education, Wm C. Brown & Co., 1956.

Category: Science

Contributor: Jo Ann Sullivan

A Look in the Woods - Climate

Begin with a pleasant, unhurried walk, and begin by noticing some of the things that makes the wooded area different from other places. If you walk through open spaces first, the difference will be more apparent.

The Climate

On a sunny day you will notice a change as you leave the fields and enter the woods. No longer does the sun feel warm, the air may seem cooler. Now using the 5 senses record what you notice about the woodland climate.

1. In what ways does the climate differ in the woodlands than from the open spaces?
2. Are some sections of the woods sunnier than others?
3. Are some sections more exposed to cold winter winds?
4. Would some areas get more rain? Why?
5. Do all sides of the trees have the same climate?
6. Are the plants on the shaded side of a rock the same as on the sunny side? Why or why not?
7. Do certain plants prefer shaded areas? Give reasons.
8. What differences can you see between growth away from the woods, the growth at the edge of the woods and the growth in the woods.

Sunlight: 1. How bright is the area? How many hours of direct sun are there?

Wind: 1. Which directions are open to the wind? Which are sheltered?

Temperature: 1. Is it cooler, or warmer than in an open space? Is it cooler or warmer in certain spots in the woods? Record the temperatures in sunny and shady spots, in animal holes and in water. Compare and explain the differences.

Moisture: 1. Is there shelter from the rain? Does the area seem to receive a lot of rain, or medium amounts? Does the area seem damp?

Sounds: 1. What insect sounds do you hear? What man-made sounds do you hear? What other types of sounds do you hear? What animal sounds do you hear, if any?

Colors: 1. What are the predominate colors around you? What other subtle colors do you notice?
2. Is there a difference in the colors in shaded areas and those in sunny areas?
3. How many different colors can you count?

Category: Science

Contributor: Jo Ann Sullivan (continued)

Smells: 1. Identify as many different smells as you can. Is there a contrast as you move from one area to another? Is there a difference in the sunny area smells than those in the shade?

2. What smells are man-made? What smells are from animals? What smells are from plants?

Touch: 1. Close your eyes and touch the tree? Describe the texture of the bark, leaves, and twigs.

2. Touch a plant and compare the difference with moss on a rock. Is there a difference? How about the rock, describe the feeling.

3. Close your eyes and identify as many objects as you can just by touching them.

4. Can you tell if you are in a shaded area or a sunny area with your eyes closed?

Culminating Activities: 1. Look for tree wounds and discuss possible causes.

2. Make pictorial sketches of the trees, flowers, birds, insects, or rocks in the area.

3. Find examples of competition in the forest and explain what is happening.

4. Make a map of the area. Make it to scale: use symbols to represent plants, etc., other items found.

Sources: Bates, David. Studies for Woodlands, Ryerson Press, Toronto, 1970.
MacMillan, Dorothy Lou, School Camping and Outdoor Education, Brown & Co., 1956.

Category: Science

Contributor: Diane Dupriest

Plants and Animals Near Water

This lesson will be conducted at a nearby pond or lake.

Objective: To familiarize students with plant and animal life found near the water.

Concept: Plants and animals found near the water have different characteristics than those found inland.

Materials: Five small cans or jars, paper, pencil

Procedure:

1. Divide class into five groups and give each group a container.
2. Discuss with the students animals to look for, or evidence of an animal, as a footprint.

Snakes	Beavers	Beetles	Frogs
Turtles	Muskrats	Minnowflies	
Birds	Worms	Crayfish	
Salamanders	Dragonflies	Fish	

3. Plants to look for:

Algae	Willows
Pondweeds	Buttonbushes
Cattails	Sycamores
Water Lilies	Cypress

Fixing the Concept:

1. At the water, instruct each child to dip his container into the water and examine the plant and animal life.
2. Ask the questions:
   - What size are the plants?
   - What size are the animals?
   - What do they eat?
3. Look for animal footprints - Speculate what animal walked there.

Category: Science

Contributor: Diane Dupriest (continued)

Art - Ask each student to sketch any footprints he finds.
(Identify them in the classroom using an encyclopedia)

4. Collect samples of leaves and stalks of plants found near the water and those found in water.

Discuss: Which leaves are soft?
Which leaves are firm?
Which stalks are soft?
Which stalks are woody?
What is the purpose of the plants along the shoreline?

Science- Take the leaf and stalk samples and footprint sketches to the classroom for identification and discussion.

Category: Science

Contributor: Diane Dupriest

The Value of Water

Objective: To develop an awareness of water and its importance to man.

Concept: To develop an appreciation of man's dependence on water.

Materials: Ice and water

Introducing the Concept:

1. Ask each student to close his eyes and hold out a hand, palm side up.
2. Put a few drops of water in some hands and ice cubes in others.
3. Ask the questions:
   - What do you feel?
   - Can you smell it?
   - Can you hear it?
   - Can you taste it?
4. Students open eyes.
5. Ask:
   - What size is water?
   - What shape is water?
   - How is its shape determined?
   - What texture has water?
6. Water can be found in three forms. What are they?
   - Gas (as steam)
   - Liquid (as for drinking)
   - Solid (as ice cubes)
7. How does man use water?
   - For drinking
   - For washing
   - For bathing
   - For recreation
   - For industry
   - For plant life
   - For animal life

Fixing the Concept:

1. Imagine for one week you will not have access to running water (ie. from a faucet)
2. How would you satisfy your need for water each day?
   - Drink milk and canned beverages
   - Swim to become clean
   - Wash clothes in lakes
   - Eat canned foods

Category: Science

Contributor: Diane Dupriest (continued)

Science Activity: Collect a leaf and stalk of a water plant and a leaf and stalk of an inland plant.

Discussion: Examine the leaves and stalks.
Which are soft? Why?
Which are woody? Why?
How are the plants alike?
How do they differ?

Category: Science

Contributor: Sonja E. Thiel

Common Trees in Hopkinsville

Purpose: To learn to recognize the most common trees in Hopkinsville.

Objectives: To help pupils - 1. Recognize a tree by its leaf
2. Recognize a tree by its bark
3. Recognize a tree by its shape, seed, flower, fruit
4. Appreciate and preserve Hopkinsville's trees

Procedure: I. Introduction
1. Take a walking tour of several blocks in town to observe trees and neighborhoods to initiate study.
2. Discuss usefulness of trees
   a. Shade
   b. Ornamental
   c. Soil Conservation
   d. Industrial uses, etc.
3. Assign reports to be given, researching trees in general.
   a. Groups
   b. Individuals
4. Present reports

II. The Local Study
1. Locate and identify common trees in our area
2. Individuals or groups may set up charts of leaves, bark samples, sketches or photographs, seed, bud, and fruit samples or pictures of such, locations of trees, uses of trees, or relatives of trees.
3. Presentations of gathered information and materials
4. Go into our field of study without aids, and see if we can identify our trees with the skills we've developed.

III. Coordinated Activities
1. Art
   a. Crayon rubbings of bark
   b. Leaf prints (spatter paint, blueprint)
   c. Drawings or sketches of trees
2. Science
   a. Label trees
   b. Collect bark specimens and leaf samples
   c. Collect wood (cut partially open and label)
   d. Collect seeds (put in jars and label)
3. Language Arts
   a. Keeping records
   b. Spellings of trees
   c. Creative writings (poetry or prose)

Category: Science

Contributor: Sonja E. Thiel (continued)

4. Social Studies
   a. Understanding how trees help people in jobs
   b. How trees make our life better
   c. Being alert to avoid unnecessary harm to trees
5. Physical Education
   a. Tree tag game

IV. Specific trees to locate in Hopkinsville

1. Dogwood	8. Elms	15. Mimosa
2. Magnolia	9. Redbuds	
3. Maples	10. Oak	
4. Sycamores	11. Cottonwood	
5. Tulip Poplar	12. Ash	
6. Willows	13. Gums	
7. Hickory	14. Locust	

Detailed Procedure: This afternoon we're going for a walk. While we're out, we want to look at the things about us, especially our local trees. Let's see if we can keep a list of the trees we see while we're walking. Who will keep a list for us? Who will carry our tree guide book? As we're out, the trees we should identify are: mimosa, gums, oak, elm, redbud, dogwood, hickory, willows, sycamore, maple, magnolia, tulip poplar, cottonwood, ash, and locust.

When we observe a different tree, questions such as the following may be asked. What kind of tree is this? How can we find out? Are the leaves simple or compound? What do we notice about the bark? What is its shape? Are there any unusual characteristics this tree has? etc.

After we come back from our field trip, we'll discuss our observations and plan our course of study. Some individuals may choose to work alone, while others will work in groups. Each will choose one or two trees to research and report upon, using all the A-V aids they can develop.

When the reports have been completed, we'll go back into the field for an evaluation of the study. We'll try to identify the trees using the information we've learned.

Category: Science

Contributor: Sonja E. Thiel (continued)

In this study, we did not include pine trees since it is planned to have a later unit on them. Most of the ideas in this unit are in outline form since they are mostly self-explanatory. The basic procedure has been more detailed, although it should be adapted to fit the needs of an individual class. This is designed to last several weeks with a follow up in seasonal changes.

Definition of terms:

Coniferous
Deciduous
Simple Leaf
Compound Leaves

Category: Science

Contributor: Jane Stewart

Visit to the Farm

Objectives: 1. To develop an awareness of, and a respect for, the animal's role in our environment.
2. To develop skills in gathering and classifying information.

Grade Level: Grade 2

Concept: 1. Animals require food and care provided by man.
2. Man requires food and products provided by animal.

Materials: 1. Silhouettes of farm animals. (One for each child)
2. Safety pins
3. Story paper, pencils, crayons (for follow-up)
4. Approximately 30 inquisitive 7 year olds

Vocabulary:
1. sty
2. stall
3. straw
4. trough
5. hutch
6. stable
7. roost

Procedure: 1. Pin a silhouette of an animal, properly tagged, on the back of each child.
2. Child will attempt to identify the animal he is portraying by asking questions of his fellow students that require a yes or no answer.
3. Child will inform teacher when he has determined the animal he is portraying.
4. Children will now visit and enjoy the various animals. It will require the instructor moving about at random to answer (and ask) various questions on an individual basis to keep this on a strictly informal basis.

Follow up: 1. Class discussion will help determine the success of the trip.
2. Allow the children to draw pictures of the animal they represented and write a story about any thing pertaining to that anim.*. (This could be done upon returning to the classroom or at a nearby outdoor setting)

*For parent consumption

Category: Science

Contributor: Tom Moore

Soil Slope

Unit: Judging Physical Properties of Soil

Concepts:
1. In the study of soils, the importance of physical properties is often overlooked or minimized.
2. Almost anyone can learn to estimate soil slope accurately.

Teaching Objectives:
1. Make clear the contrast of physical and chemical soil properties.
2. Cause the students to see that the physical features can be very limiting to land usage.
3. To develop the ability to estimate percentage of slope.

Things to be Considered:
1. Slope and topography
2. Erosion hazards
3. Tillage practices on different slopes
4. Choice of crops on different slopes
5. Training the eye to estimate % slope

Vocabulary:
Tillage
Soil structure
Soil texture
Eroding power
Plow layer
No-tillage farming

Materials Needed: Soil Judging Manual from the Cooperative Extension Service (page with the "Slope Finder" can be cut out and mounted very simply).

Instructional Procedure:
1. Guide and assist the students to bring out the things to be considered.
2. In most situations, the schoolgrounds will provide different slopes and can be used for practice.
3. Students select the sites for practice.
4. Have each student estimate the slope before he uses the slope finder.

Questions for Evaluation:
1. What should be our major emphasis for proper land use?
2. Can you estimate slope percentage accurately?

Category: Science

Contributor: Don Burchfield

Cellulose Storage Battery

Objective: Wood is stored sunshine for the beneficial use of man.

Concept:
1. The sun gives us light, heat, and energy and causes weather.
2. Oil and coal contain energy received from the sun by plants and animals long ago.
3. The lives of plants, animals and people depend upon the sun.
4. The sun energy is stored in wood and released by fire.
5. Wood is a renewable resource beneficial to mans' needs.
6. To use fire and the resource of wood with environmental wisdom.

Vocabulary:
Tender - A flammable material that will flare up when touched with the flame.
Kindling - Thin branches of split wood that will catch flames from the tender and in turn ignite the Reonier fuel.
Fuel - Wood and material that provides heat and light for the desired period of time.
Fire Triangle - Heat, fuel, and air.
Smoke -
Charcoal -
Coke -

Materials:
Lyon, Jene, Our Sun and the Worlds' Around It. New York: Golden Press, 1957. p. 57.

Hammett, Catherine T., Your Own Book of Campcraft. New York: Pocket Book, The Benjamin Company, Inc., 1950, p. 197.

Van Der, Smissen, Betty and Oswald H. Goering. A Leader's Guide to Nature Oriented Activities. Ames, Iowa: The Iowa State University Press, 1965, p. 219.

Boy Scouts of America, Fieldbook for Boys and Men. New Brunswick, New Jersey: Boy Scounts of America, 1967, p. 565.

Two fire buckets
1 box of stick matches

Category: Science

Contributor: Don Burchfield (continued)

Procedure:

A. Fire -
   1. Folk lore
   2. Neagtive and positive connotation of the wood
   3. A basic tool
   4. Technology
      a. Gas
      b. Electricity
      c. Rocket Fuels

B. Sun - Producer of Energy

C. Safety - 1. Select safe spot
      a. 10 feet lateral clearance
      b. Check overhead clearance
   2. Carry matches

D. Selection of wood
   1. Tinder
      a. Bark
      b. Twigs
      c. Fuzz stick
   2. Kindling
      a. Squaw wood
      b. Groud wood
   3. Fuel
      a. Wood
      b. Coal
      c. Oil

E. Products of a fire
   1. Heat, light, energy
   2. Weather
   3. Chemical breakdown
   4. Emotional values

F. Production of wood
   1. Plant growth
   2. Relative values of wood
   3. Renewable resource

G. Demonstration of Fire Building by Leader

H. Student Activity
   1. Students will select a site in the prepared fire circle and lay a fire and light it by using no more than two matches. They cannot chop any wood. All wood must be obtained from a natural state. Students will feel heat, light and discuss transfer of energy by heat rising. Fires will be called minisuns for the rest of the activity.

Category: Science

Contributor: Don Burchfield (continued)

I. Trees not to be burned for sake of the environment
   1. Wildlife value
   2. Lumber value
   3. Erosion control
   4. Aesthetic value
   5. Environmental value judgement

J. Site and resource restoration
   1. Put fire out completely before leaving
   2. Dig in the ashes
   3. Plant a tree
   4. Stack up remaining wood

K. Discussion of student's ideas on fires as a positive and negative element to our environment.

Category: Social Studies

Contributor: Barbara Hale
(Teacher of a Learning Disabilities class in Paducah - Students range from ages 9-11)

Homes in the Neighborhood

Purpose: To learn about different homes available in the community and to understand the work that is done in constructing and maintaining a home.

Objectives:
A. To help children learn to observe the different homes in the community.
B. To help children become aware of the work involved in contributing and maintaining a home.
C. To help children become aware of all the materials it takes to construct different homes.
D. To help children become aware of where some of the materials in building a home comes from.
E. To help children learn to identify some of the plants used in landscaping a yard.
F. To help children become aware of how to care for a yard.

Materials Needed:
A. Cardboard Boxes
B. Paper Mache
C. Construction Paper - Crayons
D. Films and Filmstrips

Introducing Lesson:
A. Talk about the different homes that are in the school community. (Ex.) Apartments, trailers, houses.
B. Talk about kinds of materials used in the different homes.
C. Discuss the differences in the older homes and the newer homes.
D. Talk about what people do to care for their homes.
E. Talk about the different sizes, and shapes of homes.

Activities:
A. Take a walk in the neighborhood and observe the different homes.
B. Visit different types of homes such as an apartment, trailer, one story house, two story house.

Category: Social Studies

Contributor: Barbara Hale (continued)

C. Visit historical homes in the area.
D. Visit a lumber yard. Have a guide talk about different materials used in building.
E. Visit a nursery. Observe the different plants used in landscaping.
F. Write experience stories about all of these field strips.
G. Get permission from principal to let students set out some plants on the schoolground to aid in the landscaping.
H. Construct different types of homes out of cardboard boxes, paper mache, or any other material available.
I. Learn to identify different trees in the neighborhood.
J. View films and filmstrips about different trees and plants used in landscaping a home.

Follow-Up Activities: A. Invite another class in to see the homes that students constructed.
B. Plan a program for parents and have students tell what all has been accomplished in this project.

Category: Social Studies

Contributor: Becky Kanipe

Objective: A. To help children realize that much of a history of a region can be told by studying rocks and fossils.
B. To show children how rocks are formed.

Concepts: A. Rocks are different in many ways such as hardness, color, and texture.
B. The identification and grouping of rocks is dependent on how they were made and where they come from.
C. Hardness is a means of identification.
D. Sandstone is a rock formed by the action of wind, water and ice on older rocks.
E. Clay is a sedimentary material which may or may not become a rock.
F. Clay has been used for making bricks, pottery, chinaware, and other things.
G. Limestone is a sedimentary rock that varies in color, texture, and origin. The origin is mainly plant or animal marine life.
H. Because of the way they are formed most sedimentary rocks are layered and it is from these layers that geologists get much of their information.
I. Fossils are the remains or prints of former plant or animal life found naturally buried in rock.

Procedure: A. Introduction
1. A careful study of sedimentary rocks help us to understand their origins.
2. Sedimentary rocks are the most common type of rock.
3. Sedimentary rocks can indicate the vast areas that were once lakes, rivers, and ocean beds.
4. They can also give clues as to the kind of lakes that existed when the rocks were still sediment.
B. Testing Rock
1. Have students collect rocks from along a stream, a lake, the roadside, and any other place that they can find them.
2. Select any two and rub them together to see which rock scratches the other.
C. Sandstone
1. Sandstone is made up of grains of sand stuck together.
2. Sandstone was formed millions of years ago when the earth was covered primarily by a huge sea.

Category: Social Studies

Contributor: Becky Kanipe (continued)

3. The rivers that emptied into this sea carried sand and other sediment into the sea and these gradually sank to the bottom.
4. The pressure of this sediment got heavier and heavier and pressed the underneath layers together forming sedimentary rocks.
5. Indians used sandstone for building their homes in the desert. Many people still use it today for steps and walls.

D. Clay
1. All clay is made from rocks that were borken into clay grains by sunlight, water, and plants.
2. Clay is also a sedimentary material made from rocks of different colors.
3. Clay is used for many things such as brick, pottery, and even houses called adobe.
4. Heat can change clay from soft to hard.

E. Limestone
1. Limestone is a sedimentary rock formed from animals living in the ocean, as they die their bodies sank to the bottom of the ocean and eventually formed rocks as the other sedimentary rocks were formed.
2. In some limestone bits of shell can be seen.

F. Fossils
1. Fossils are rocks that have the remains of living things left in rocks.
2. Fossils help to find out about plants and animals that lived millions of years ago.
3. Fossils are found in sedimentary rocks.
4. Sometimes an animal left its footprints in the mud and as it hardened the prints could still be seen.

Activities: A. 1. Collect rocks from different places such as streams, hills, roadsides, and places such as these.
2. Spread the rocks out on paper and compare them.
3. Try to group them into groups by color, texture, size. Examine them in water to see if one dries faster, if they are layered and so on.

B. Clay
1. Mix clay with water and straw and put into a milk carton.
2. Leave the clay in the sun for a while until it dries and take it out and finish drying it and you have a brick.

C. Collect a handful of sand, dry mud and a handful of clay. Mix each with water. Squeeze out the water and see what happens. Put each sample on paper in the sun and let it dry.

Category: Social Studies

Contributor: Becky Kanipe (continued)

D. Fill a jar with sandy-pebbley soil and add water nearly to the top. Put on the cap and shake the jar. Watch what happens.
E. Collect rocks and paint designs on them or make them into whatever they look like.
F. Collect different colored rocks and make a mosaic from them.
G. Make rubbings of different rocks to see the difference in their textures.

Category: Social Studies

Contributor: Jim Wallace

History of Moonshining "Between the Rivers"

Objective: To trace the history of whiskey making in the area.

Concept: The production of moonshine is an interesting and integral part of the history and culture of the area.

Materials: A knowledge of the history of the area.
If the students are not familiar with the history of the area, briefly go over the history of the white man in the area. Through introducing industries and ways of earning a living, you can introduce the idea of moonshining.

Questions to ask in leading the discussion:

1. Why did early settlers make whiskey in this area?
2. What changes in our society or way of life brought on the making of whiskey as a big business in our country?
3. What legislative moves made moonshining in this area a big business?
4. How did economics perpetuate this business?
5. Why did moonshining become so big in this particular area?
6. Why was the Federal government against moonshining during and after prohibition?
7. What is the difference between moonshine, "white lightning", and bootleg?
8. Why did moonshining decline in the area after World War II?
9. Can you think of a situation in industry or daily life that parallels this situation?

Category: Social Studies

Contributor: Jim Wallace

Making of Moonshine

Objective: To look at the process of making moonshine whiskey.

Materials: If possible, a model of an old still or a drawing of a still

Questions to Ask:
1. What chemical process is involved in making whiskey?
2. Why is the apparatus called a still?
3. How was an old-time still constructed?
4. What is mash?
5. What raw materials are used to make mash?
6. What other materials were needed?
7. Can anyone go through the process?
8. Was making whiskey easy?
9. Was it alright for these people to make moonshine?
10. Where would you look for sites of old stills in this area?

Category: Social Studies

Contributor: Shirley Litty

Coke Bottle Dilemma

Objectives:
1. To provide opportunity of social interaction of group.
2. To provide physical activity and improve coordination.
3. To interest and provide a challenge to students.
4. To provide a sense of accomplishment by successfully completing activity.

Concept: Involvement in an activity can be fun.

Activity: Materials for this game can be provided or the sticks can be found in the woods by students. Slightly felxible (small, straight) branches from trees provide a good type of stick. If students find their own sticks, they should cut them 3 feet long. Also, string should be cut 3 feet long. Tie one end of string to one end of stick and then tie the metal ring to the other end of the string. The result looks something like a small fishing pole. After this is completed, the game can be demonstrated.

Procedure: Demonstration -
Take one of the "fishing poles" made by a student, and try to hook the dangling ring over the neck of the bottle that is lying on the floor. If you succeed in this, then try to raise the bottle to a steady upright position. Students now try their luck. Four foot square area needed per student.
Note: Competition is not between students.

Materials: For each student -
3 foot stick
3 foot string
1 1/2" metal ring
1 (small)coke bottle

Category: Social Studies

Contributor: Karen Baker

Objective: To familiarize children with garden vegetables and to discover where they are grown or where they may be obtained.

Concept: Vegetables are good sources of vitamins that are grown from the soil.

New Vocabulary:

Vegetable	Green pepper
Tomato	Celery
Lettuce	Radish
Onion	Carrot
Cucumber	Bean
Pea	Squash
Potato	Corn

Procedure:

1. Ask the question. What did you have for dinner last night? Then ask if the children know what type of food they had eaten.
2. Tell the children that they had eaten a vegetable. Explain that the roast (or whatever) was a meat, the peaches they ate was a fruit, and the bread they had was a cereal.
3. There are 4 food groups: meat, cereal, fruits, and vegetables.
4. Let the children discover for themselves what foods are vegetables by having each child mention a food that he had the night before.
5. Use cards with names of vegetables on them. Discuss these names and show a picture of each vegetable named.
6. Ask the question: Where do we get our vegetables? (Keep in mind that most children would probably say - "At the grocery store.") Explain that you may buy your vegetables at a grocery store, but they are grown on a farm in a garden, or in a greenhouse.
7. Explain that vegetables are good sources of vitamins which we need everyday to build strong bones and teeth, and for healthy eyes and complexion.

Activity:

1. Visit a farm or vegetable garden so that the children can see the vegetables as they grow. If it is the wrong time of the year, visit a greenhouse.

Category: Social Studies

Contributor: Karen Baker (continued)

2. Be sure that the children associate the correct name with the vegetable. Point out how the vegetables grow differently. Ex. - Corn on a stalk; a tomato on a vine.
3. Explain to children how to tell when a vegetable is ready to be picked and eaten. Let the children pick out the vegetables that are ready and pick some of the vegetables.
4. Return to the classroom. Assign an activity for each child. Wash and prepare the vegetables for a fresh salad. Make sure that each child has a chance to participate.
5. Supervision is extremely important while the children are preparing the vegetables.
6. When the tables are set and the salad is ready, all sit down and enjoy the salad.
7. During the snack, pay close attention to those children who might not want to taste some of the vegetables. Encourage the child as much as possible to try a new vegetable.
8. Suggest to the children that they encourage their mothers to include fresh vegetable salads on their menu often.

Materials Needed. Fresh garden vegetables
Paring knife (not very sharp)
Paper plates
Paper cups
Napkins
Plastic silverware
Pictures of garden vegetables
Word cards.

Category: Social Studies

Contributor:- Caldwell Smith, Sr.

Life Patterns of Man and Insects

Objective: To motivate children's interest about man s life pattern in comparison to that of insects.

Concept: To give the right direction of planning for life in a modern society.
Define the following terms: (a) ghetto (b) urban area (c) migration (d) rural area (e) ant colony (f) reproduction (g) survival of the fittest.

Materials:- Partly decayed wood in natural habitat with insects moving in and out of cracks and holes.

Discussion: (a) Man s migration to urban centers
(b) Physical and natural environmental factors of man
(c) Benefits of insects
(d) Project used

Questions: 1. Why do we have ghettoes in urban areas?
2. Who is man's worst enemy? Why?
3. Name some of insect s enemies?
4. Is anything being done to prevent migration to urban centers?

Category: Math

Contributor: Mary N. Brown

Estimating

Grade Level: Elementary Grades

Objectives: A. To develop a capacity to estimate distance, height, and quantity.
B. To apply math skills to first-hand experiences in the out-of-doors.

Concept: Measurement is an important tool to understand man and his relationship to and use of his environment.

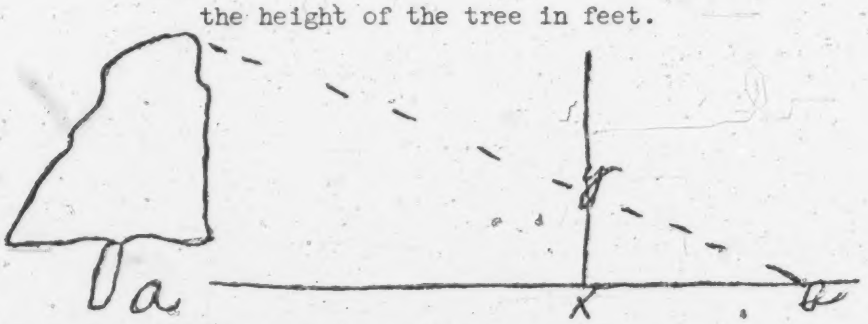
Materials Needed: Tape or one hundred foot string for use in measuring pace
Yardstick or ruler
Note pads
Pencils
A wooded area

Activities: A. Determine students pace:
Measure one hundred feet in a straight line on a fairly level area with tape or one-hundred foot string. Define a pace as two steps - - - if one steps off with his left foot first, when his right foot strikes the ground (the second step) that will be one pace. Have the students pace the measured distance a few times and find the average to determine his pace.
B. Pace off an area ten feet square and count the number of trees in the square.
C. Define an acre (209' X 209') and have the children estimate the number of trees in an acre of forest.
D. Estimate the height of the tallest tree.
Inch to foot method - starting from tree (a) walk eleven steps and mark the end point (X) with a long perpendicular stick, then measure one step more and mark that point (b). Sight from (b) across the stick to the top of the tree. Mark on the stick the point (y) where your line of vision intersects the stick. Measure the distance from point (X) to point (y) in inches. This will be

Category: Math

Contributor: Mary N. Brown (continued)

the height of the tree in feet.



E. Estimate the height of a small tree.
F. Count the number of branches on the small tree and estimate the number of branches on the tallest tree.
G. Discuss the differences in the answers. Ask leading questions to see if someone will determine that to average all the answers will give a more nearly correct estimate.
H. Discuss how this information might be used and by whom.

Category: Math

Contributor: Mary K. Brown

This lesson plan is for use on the school ground after the field trip and lesson on Estimating.

Objectives: A. To help the student understand that environmental differences can cause differences in living things.
B. To learn where forest can grow.

Concept: Man influences living things by changing the environment to meet his needs.

Materials Needed: Tape or one-hundred foot string
Ruler
Note pad and pencil

Activities: A. Measure some of the trees on the school ground using the Inch to Foot method. (See Lesson Plan on 'Estimating')
B. Count the number of trees on the school ground and compare that number to the number on a similar size plot in the forest.
C. Compare the appearance of the trees on the school ground and those in the forest (ie. number of branches, shape, size, and kind).
D. Have a discussion of the following questions about trees.
1. Why did they grow differently?
2. What are their needs?
3. How different would our world be without trees?
4. How can we help protect them?

Category: Math

Contributor: Caldwell Smith

Measurement

Objective: To create an interest in the use of out of doors material for teaching measurements.

Concept: Certain out of door objects or material can be used successfully in teaching mathematics.
(a) Distance between trees can be used to practice measuring.
(b) Many out of door items can be used to mark distances.
(c) There are many objects to work with in determining distances.

Material:
1. Tape measure
2. String
3. Yard stick

Procedure:
1. Show methods of how man once determined distance.
2. Have student figure distance from one object to another in his own way.
3. Let students check for accuracy with yard stick or tape measure.

Vocabulary:
1. Hand
2. Yard
3. Foot
4. Acre

Category: Math

Contributor: Anna Guess

Grade Level: Grade 1

Objectives:
1. To teach one to one relationship
2. To teach numeral values (numbers)
3. To correctly form the numeral
4. To learn meaning of numeral, number sets, patterns

Procedure: In outdoor setting, ask each child to find a stick as long as his hand from wrist to fingers and as big as his thumb. Then pick up as many "things" as he has fingers. Not too big and not too small as these "things" are going to be their helpers.
After collections have them to sit informally as we discuss how many "things" they picked up. Hopefully 10, but have them show 1 to 1 relationship with a partner's fingers. Same? Different? What's wrong? How can we correct this? Etc. Now how many do you have.
The word you used is called a numeral, it names the "squiggles" you see here. (Show card for numeral 10). That bunch of things you collected is the number of things necessary to show the order of 10. Let's look at the size of your bunch. You know, bunch doesn't sound very grown up. Let's use a new word I found that tells it better. Set: Help me remember to say set instead of bunch.
Now let's use those sticks you have. Watch while Dr. Guess performs her operation. 10 pull the stick down, start at top go this ↻ way, around and back to top. (This is to be done in a smooth path or barren area). Now, your turn to be the Dr! Easy now, this is Mother Nature you are working on. She wants to look pretty.
What do we call this squiggle you made? (Going for numeral if not given, ask more leading questions.) Let's make a picture with you set of 10 (patterns for easy identification of a set.)
Choose numerals at random until all have been identified, patterns illustrated and numerals practiced or stop at any point where attention span demands.

Materials Needed: Before Class: Numeral cards 1-10 if possible with arrows showing direction
In Field: Counters and stick for pencil

Category: Math

Contributor: Charlene Chism

Shapes

Grade Level: Grade 1

Objective: To broaden the understanding of the basic geometric shapes through observation and comparison.

Review Words: Circle, Square, Triangle, Rectangle

Concept: Geometric shapes may be found in the natural environment and in the formation of man-made objects.

Procedure:
1. Display paper cut outs and ask pupils to name and describe the shape and tell what line or lines form the shape we are referring to.
2. Ask children where these shapes may be found outside of the classroom.
3. Proceed to playground and designate areas you consider off-limits at the time.

Activities:
1. Take short walk. Ask children to look for the shapes being studied using buildings, plants, ground parking lot, etc. (10 min)
2. Ask each child to find a stick. (Encourage pupils to refrain from choosing sharp pointed sticks for safety reasons)
3. Compare sticks - who has the longest stick? Shortest stick, largest-biggest, littlest-smallest stick?
4. Each child will use the stick to draw in the dirt the shape that impressed him most - giving its name and location.
5. Add other shapes to the sketch you have drawn to make a picture of some object (house, truck, lollipop, tent, etc.)

Equipment:
1. Paper cutouts
2. Stick

Category: Math

Contributor: Linda Teague

Objective: To teach ordering of numbers. (1-5)

Concepts: 1. There is an ordinal number for each object place in a certain order.
2. Introduce ordinal words such as first, last, next to, beside, in front, behind.

Vocabulary: First, second, third, fourth, fifth, last, before, after, next.

Materials: Pencils - one for each
Number cards
Word cards
Magic marker
Blank cards
Flight quiz - for each

Procedure: Activity I
1. Have five children find five different objects and lay those objects in a row. (Rock, leaf, stick, grass, mushroom)
2. Count the objects (1, 2, 3, 4, 5)
3. Now put 1-5 number cards in front of the objects in order.
4. Introduce ordinal words first---fifth.
5. Assign cards with ordinal words to each object.
6. Ask questions about which object is last, what is next to the third, what comes before, what is after, etc.

Activity II
1. Let's play a game called "Where Next?"
Rules:
a. One person is leader
b. Everyone lines up
c. Leader says to first person in line "First, go to _____."
d. The first person goes and returns then asks the leader, "Where next?"
e. Leader says, "Second, go to _____."
f. Continue through the fifth direction; each time the leader must say the next ordinal number.
g. Now leader goes to the end of the line and the first person becomes leader.

Activity III
1. Have scavenger hunt.

Category: Math

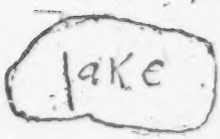
Contributor: Linda Teague (continued)

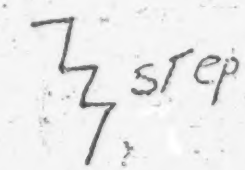
2. Teacher gives first command as child returns each object he gets a new command.
3. The first to bring all five objects wins.
   First - brown rock
   Second - mushroom
   Third - oak leaf
   Fourth - twig
   Fifth - fly

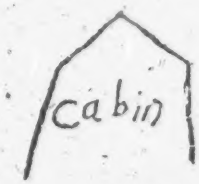
Activity IV

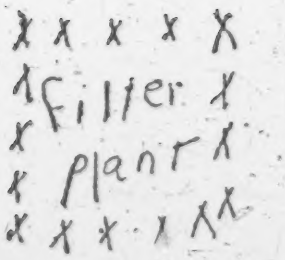
1. Give directions.
2. First say, "We are going to pretend that we are birds going on a flight to five places. We will land at each new place. Each of you choose to be a particular kind of bird. Remember birds can't talk like people. Let's see what kind of bird has the best memory."
3. Take children on pretend flight. (Stop at steps, filter plant, lake, woods, cabin)
4. Children complete memory quiz.

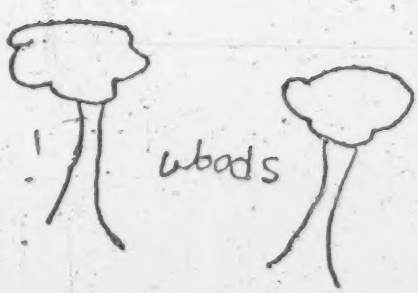
Use these words to tell in what order we took our flight.
First, second, third, fourth, fifth.











Category: Phy. Ed. & Recreation

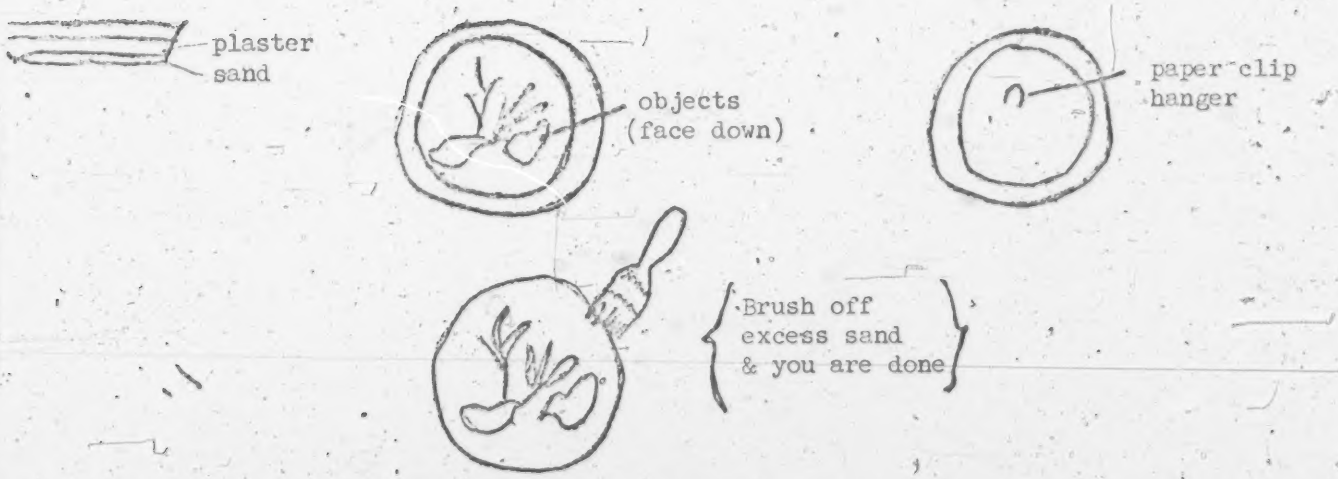
Contributor: Malcolm Eagleson

Sand Casting

Grade Level: Middle School Level

Materials: Tin foil pie plates
Paper clips or hair pins
Found items (Natural)
Large clean milk carton
Water
Stiff two inch paint brush
Plaster of paris

Procedure: Layer sand in the bottom of the pan.
Set your "found items" face down in the sand.
Mix the plaster of paris and pour over the items in the pan.
Insert a paper clip or hair pin in the wet plaster (hanger).
When dry, remove from pan. Brush off the excess sand and you will have a plaque.



Category: Phy. Ed. & Recreation

Contributor: Malcolm Eagleson

Cooking Out Doors

Grade Level: Middle School Level

Materials: Institutional cans
Tin snips and drink can-opener
Food (those items suitable for frying)
Matches
Wood
Some sort of turning device

Procedure: Build a small fire under the can. Feed it with small twigs found nearby which are dry. Use the larger twigs to maintain your fire. Use grease to keep the food from sticking.
When you have finished be sure to put your fire completely out.

Back view

Front view

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